

Exc No: 10 a)

Design and Configure a simple internetwork using a router

Aim:

To design and configure a simple internetwork using a router.

Procedure:

Step 1) Configuring the router (Router 1)

1. Select Router 1 and open the CLI tab
2. Press Enter to login configuration
3. Enter privileged mode:

Router > enable

Router # config terminal

4. Configure the first interface (Fast Ethernet 0/0)

Router(config)# interface Fast Ethernet 0/0

Router(config-if)# ip address 192.168.10.1  
255.255.255.0

Router(config-if)# no shutdown

5. Configure the second interface (Fast Ethernet)

Router(config)# interface FastEthernet 0/1

Router(config-if)# ip address 192.168.1.2  
255.255.255.0

Router(config-if)# no shutdown

Step 2] Configuring the PCs

1. Click on PC0, go to desktop > IP configuration and assign.

• IP address: 192.168.10.2

• Subnet Mask: 255.255.255.0

• Default Gateway: 192.168.10.1

2. Click on PC1, go to desktop > IP configuration, and assign

• IP address: 192.168.20.2

• Subnet Mask: 255.255.255.0

• Default Gateway: 192.168.20.1

Step 3] Connecting devices

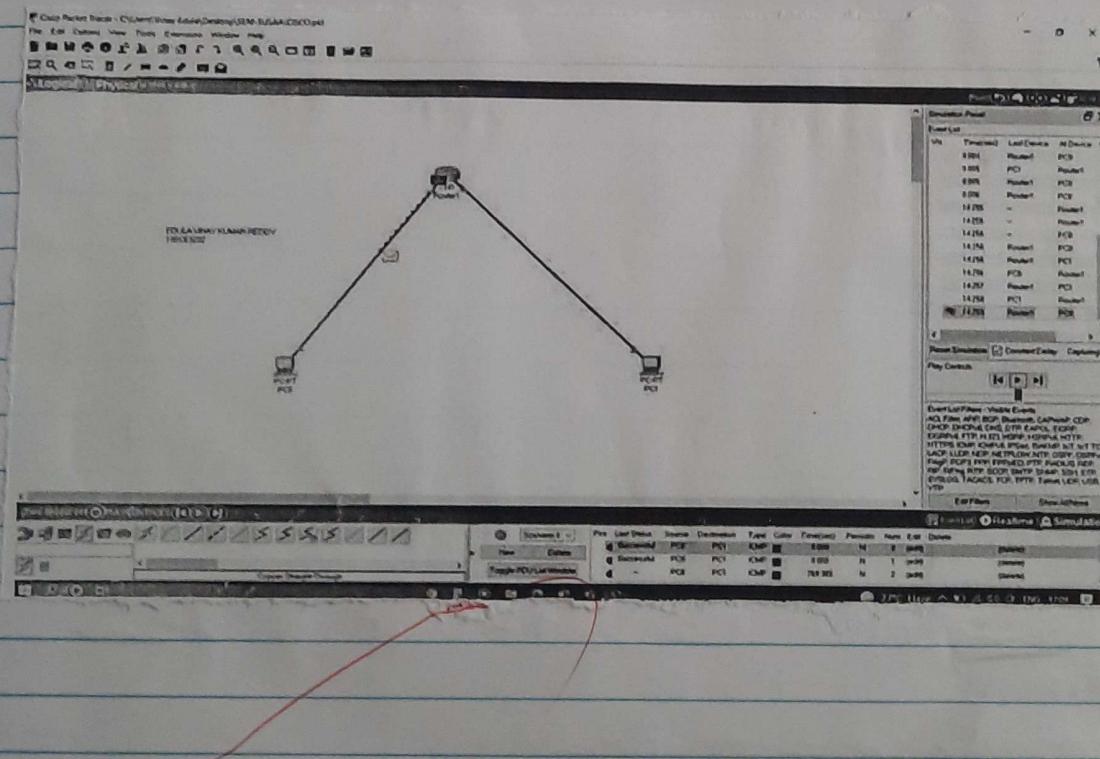
Router:

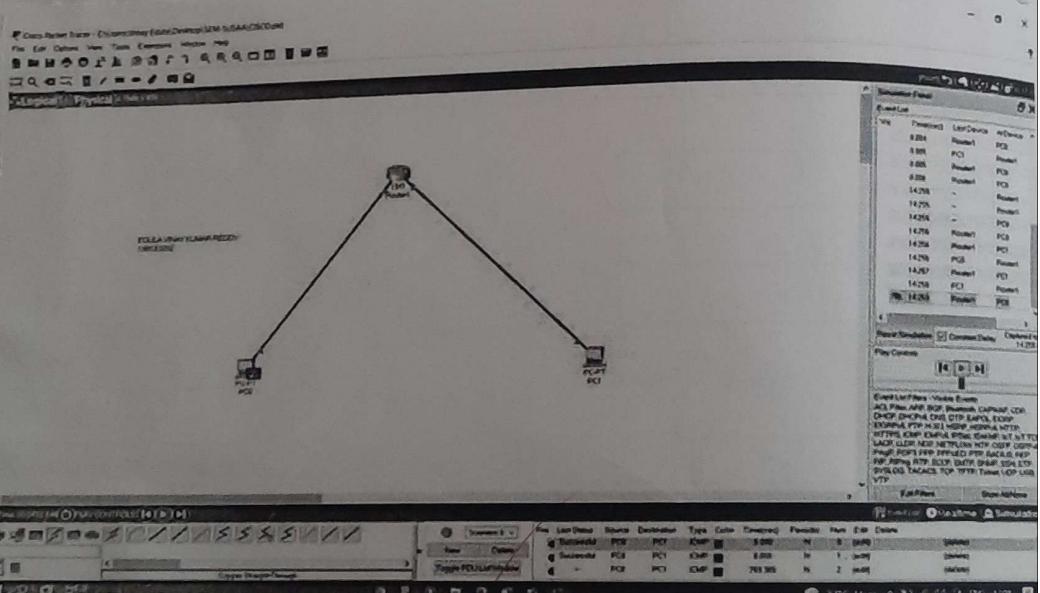
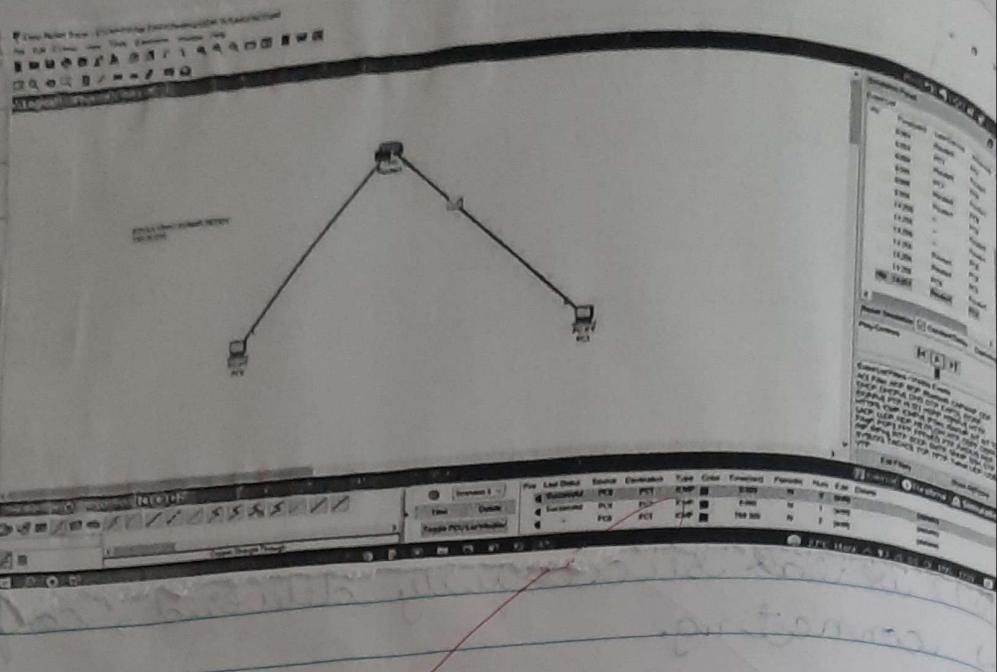
1. Use copper straight through cable to connect

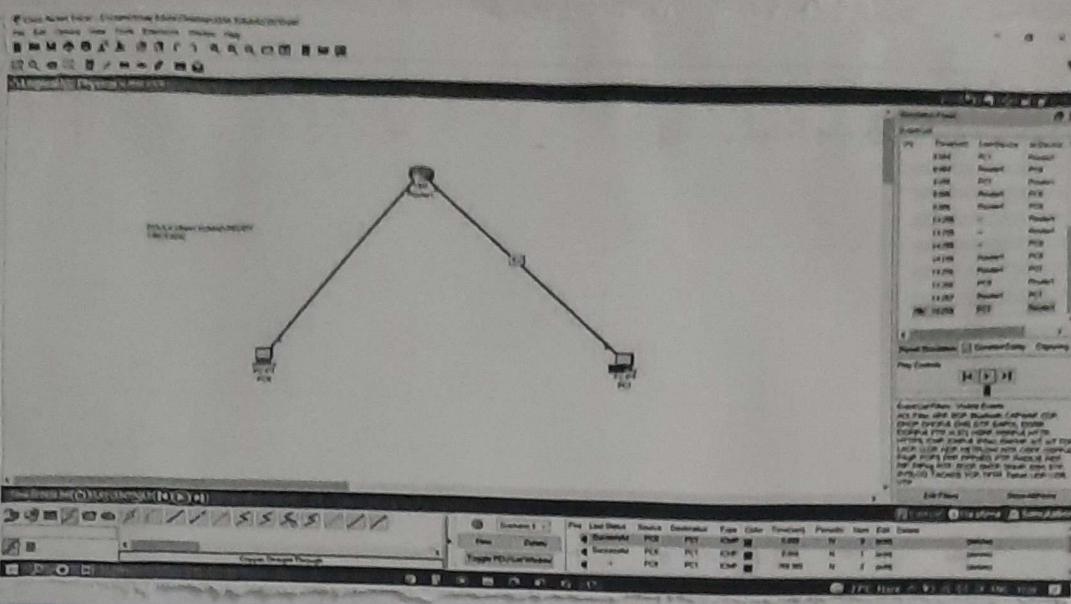
- PC0 → Router 1 · Fast Ethernet 0/0
  - PC1 → Router 1 · Fast Ethernet 0/1

## Step 4] Testing the network

1. Go to simulation mode in Cisco packet tracer.
  2. Send a simple PDU from PC0 to PC1.
  3. If the configuration is correct, the PDU will be successfully delivered, confirming connecting.







Result: Design and configuration of internetwork using a router is implemented successfully.

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Design and configuration of internetwork using a router is implemented successfully.

10b) Design and Configure an internetwork using DHCP

Aim:  
To design and configure an internetwork using wireless router, DHCP server and internet cloud.

Procedure:

1) Build the topology:

- Add the following devices from the selection box:
  - End devices: PC, laptop, server (rename to Cisco)
  - Wireless devices: Cable Modem
  - WAN Emulation: Internet cloud

2) Connect Devices:

- Use Copper straight-through cable to connect the PC to an ethernet port on the wireless Router.
- Use a coaxial cable to connect the cable modem to the internet cloud's coax port.

- Use a straight through cable to connect the clouds Ethernet port to the cisco.com server

### 3) Configure the cisco.com server

- Click the server. go to the config tab and set its default gateway to 208.67.220.1 and DNS server to 208.67.220.220.
- Select the Fast Ethernet0 interface. and assign the static IP address 208.67.220.220 with a subnet mask of 255.255.255.0
- Go to the services tab  $\rightarrow$  DNS. Turn the service on ON. For the name, type cisco.com, and for the address, enter 208.67.220.220

### 4) Configure the wireless Router

- Open the GUI tab.
- Under setup, ensure the DHCP server is Enabled. Set the static DNS1 to 208.67.220.220.
- Under the wireless tab, change the network name (SSID) to home network
- Save Settings

## 5) Configure the End device

- PC: Go to the desktop tab → IP configuration and select DHCP

- Laptop: In the physical tab, turn off the laptop, replace the Ethernet module with the WPC300N wireless module, and turn it back on. Then go to desktop → PC wireless → Connect, find home Network, and connect.

## 6) Verify connectivity:

Open the command prompt on the PC and type 'ping cisco.com'. The ping should be successful, confirming the entire network is configured correctly.

## Student Observation:

- 1) Write down the key features of configuring wireless router and DHCP server.  
a) Wireless Router
  - Set the Wi-Fi name (SSID)
  - Enable the DHCP server for the local network (LAN)
  - Set the static DNS server address for internet name resolution.

## i) DHCP Server:

- Defines an IP address pool for clients
- Assign the default gateway address
- Assign the DNS server address

## 2) What is the significance of a DHCP server in internetworking?

A DHCP server is significant because it automatically assigns IP address, gateways, and DNS server information to devices on a network. This eliminates the need for manual configuration on each device.

## 3) Design and configure an inter-network in your lab using switch, router, and Ethernet cables. Draw and label the design in your notebook. Also show the IP configuration of each and every device

(192-168-10-10)

PC - A

(LAN)

(192-168-

10-10)

PC - B

Switch 1

Router

Switch 2

PC C

(192-168-10-1)

(192-168-10-10)

(192-168-10-20)

PC - D

(192-168-

20-1)

## open Date

### IP address Configuration table:

Device	Interface	IP address	Subnet mask
Router	GigabitEthernet0/0	192.168.10.1	255.255.255.0
	GigabitEthernet0/1	192.168.20.1	255.255.255.0
PC-A	Ethernet	192.168.10.10	255.255.255.0
PC-B	Ethernet	192.168.10.11	255.255.255.0
PC-C	Ethernet	192.168.20.10	255.255.255.0
PC-D	Ethernet	192.168.20.11	255.255.255.0

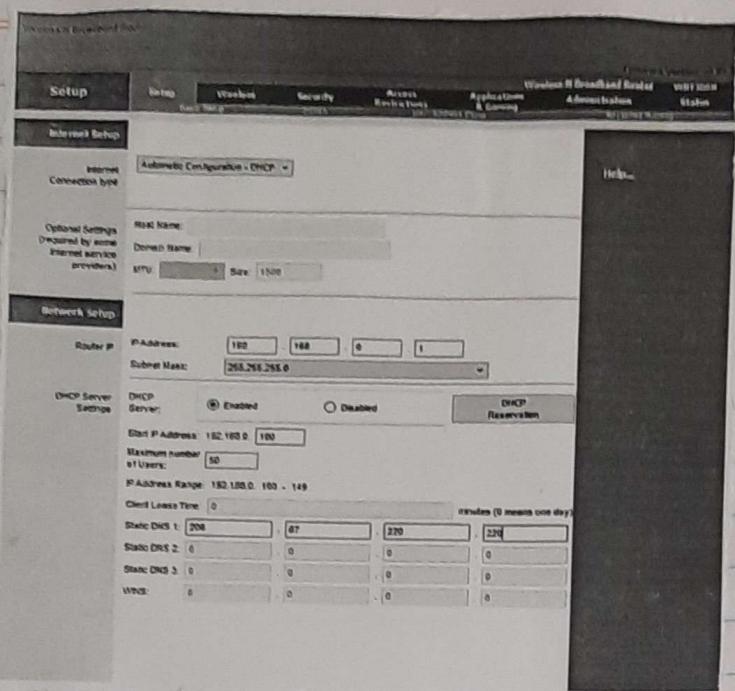
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Packet Traces PC Command Line 1.0
C:\ipconfig /all

FastEthernet0 Connection (default port)

Connection-specific DNS Suffix .: 
Physical Address . . . . .: 0001-96EE-2B1B
Link-local IPv6 Address . . . . : FE80::201:96FF:FEEE:2B1B
IP Address . . . . .: 192.168.0.101
Subnet Mask . . . . .: 255.255.255.0
Default Gateway . . . . .: 192.168.0.1
DNS Servers . . . . .: 208.67.220.220
DHCP Server . . . . .: 192.168.0.1
DHCPv6 Client DUID . . . . .: 00-01-00-01-7D-9E-2B-00-01-96-EE-2B-1B
  
```

Result;



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PC

Physical Config Desktop Programming Attributes

Opening Prompt

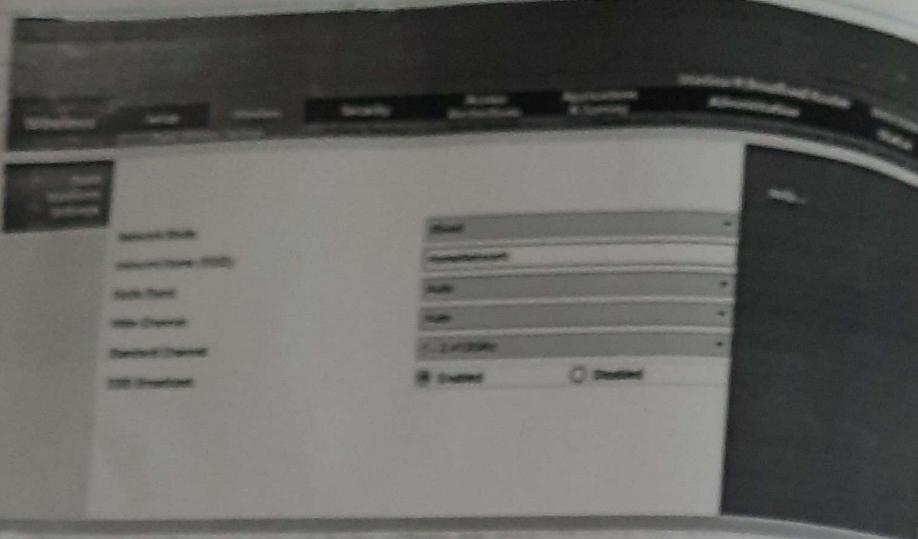
ID Address.....: 0.0.0.0
Subnet Mask....: 0.0.0.0
Default Gateway.: 0.0.0.0
DNS-Server....: 0.0.0.0

C:\>
C:\>
C:\>
C:\>
C:\>
C:\> C:\> config /renew
ID Address.....: 192.168.0.101
Subnet Mask....: 255.255.255.0
Default Gateway.: 192.168.0.1
DNS Server....: 208.67.220.220

C:\>
C:\>
C:\>
C:\>
C:\>
C:\> C:\> ping Cisco.com
Pinging 208.67.220.220 with 32 bytes of data:
Reply from 208.67.220.220: bytes=32 time=1ms TTL=127

Ping statistics for 208.67.220.220:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 10ms, Average = 3ms
C:\>

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~~Result:~~

~~Devices are connected to the wireless router receive IP address~~